

ADDENDUM 2

project Lake Superior Zoo Black Bear Exhibit

project # 019001.00

date July 31, 2019

from Tiersa Wodash, DSGW Architects

to All planholders for above project

The following addendum shall become part of the construction documents for the construction of the above referenced project. This addendum supersedes and supplements all previous reference to similar items.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am duly a Licensed Architect under the laws of the State of Minnesota.

Signature

Registration #

Date

21068

July 31, 2019

general clarifications

 Structural framing assemblies for exterior viewing windows to CHANGE from stainless steel to hot dipped galvanized steel.

specifications

SECTION

DESCRIPTION

00 01 10

PROIECT MANUAL INDEX

 OMIT this section as originally issued & revised in Addendum 1 and REPLACE with Section 00 01 10 – Project Manual Index – Revised, as included with this addendum.

drawings

SHEET

DESCRIPTION

Following is a summary of the changes to drawing sheets that are being reissued with this addendum.

Eo.1 COVER SHEET – ELECTRICAL

1. Circuiting revised in panel schedules due to plumbing equipment revisions.

E2.1 FIRST FLOOR PLAN – POWER

- Removed connections to heat trace.
- 2. Removed connection to recirculating pump.
- 3. Relocated connection to gas water heater.

Po.1 COVER SHEET AND SPECIFICATION - PLUMBING

1. Spec. Section 22116 - revised.

P1.1 FLOOR PLANS – PLUMBING

- 1. Revised keynotes 2, 3, 4, 5 & 8.
- 2. Rerouted CW main to underground entry to semi-heated space.
- 3. Relocated water heater and expansion tank.
- 4. Eliminated circulating pump and HW recirculation piping.



- 5. Rerouted CW and HW piping.
- 6. Eliminated heat trace table.
- 7. Added note for waterfall supply piping.

P_{5.1} PLUMBING SCHEDULES

- 1. Eliminated circulating pump schedule.
- 2. Revised Gas-Fired Water Heater Schedule.

Enclosures -

- Spec. Section 00 01 10 Project Manual Index Revised (2 pages)
- Windsor MEP Drawings Eo.1, E2.1, Po.1, P1.1 & P5.1 (24x36)(5 pages)

This addendum shall become part of this bid. The bidder shall insert the addendum number in the space where indicated on the proposal form. Failure to comply may result in the bid being rejected.

END OF ADDENDUM TWO (2)

SECTION 00 01 10

PROJECT MANUAL INDEX

LAKE SUPERIOR ZOO - BLACK BEAR EXHIBIT RENOVATION **DULUTH, MINNESOTA**

DIVISION OF BROCK	UDEMENT AND CONTRACTING DECUMPEMENTS
	UREMENT AND CONTRACTING REQUIREMENTS
00 01 01	PROJECT MANUAL TITLE AND REGISTRATION SHEET
00 01 10	PROJECT MANUAL INDEX
00 01 15	SCHEDULE OF DRAWINGS
00 11 10	ADVERTISEMENT FOR BIDS (CITY OF DULUTH)
00 21 00	INSTRUCTIONS TO BIDDERS
00 41 10	BID FORM ONLINE (CITY OF DULUTH – BID EXPRESS)
00 51 10	LIST OF CONTRACT FORMS (BID EXPRESS)
00 52 00	CONTRACT AGREEMENT FORM - AIA Document A132/CMa
	Standard Form of Agreement Between Owner and Contractor
00 72 00	GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION
	(AIA A232/CMa - 2009 – as modified for this project)
00 72 10	SUPPLEMENTAL GENERAL CONDITIONS
DIVISION 01 GENE	RAL REQUIREMENTS
01 10 00	SUMMARY OF WORK
01 12 00	LIST OF WORK SCOPE CATEGORIES & WORK SCOPE INDEX
01 12 10	WORK SCOPE - GENERAL REQUIREMENTS FOR ALL CONTRACTS
01 12 10 01 12 20 2-A	WORK SCOPE FOR 2-A - DEMOLITION PACKAGE
01 12 20 3-A	WORK SCOPE FOR 3-A - CONCRETE PACKAGE
01 12 20 3-B	WORK SCOPE FOR 3 B - CONCRETE RESTORATION
01 12 20 4-A	WORK SCOPE FOR 4-A - MASONRY PACKAGE
01 12 20 4-A	WORK SCOPE FOR 5-A - STRUCTURAL STEEL & MISC. METALS - COMBINED
01 12 20 3-A	MATERIAL & ERECTION
01 12 20 6-A	WORK SCOPE FOR 6-A - CARPENTRY PACKAGE
01 12 20 0-A 01 12 20 7-K	WORK SCOPE FOR 7-K – JOINT SEALER PACKAGE
01 12 20 7-R 01 12 20 8-A	WORK SCOPE FOR 8-A - DOORS, FRAMES AND HARDWARE - MATERIAL ONLY
01 12 20 0-A 01 12 20 9-K	WORK SCOPE FOR 9-K – PAINTING AND COATINGS
	WORK SCOPE FOR 9-K - PAINTING AND COATINGS WORK SCOPE FOR 13-A - ARTIFICIAL ROCKWORK
	WORK SCOPE FOR 13-A - AKTIFICIAL ROCKWORK WORK SCOPE FOR 23-B - COMBINED MECHANICAL
	WORK SCOPE FOR 26-A – COMBINED ELECTRICAL PACKAGE
	WORK SCOPE FOR 31-A – EARTHWORK, EXTERIOR IMPROVEMENTS, &
01 12 20 01-74	UTILITIES
01 29 00	PAYMENT PROCEDURES
01 31 00	PROJECT MANAGEMENT AND COORDINATION
01 32 10	PROJECT SCHEDULE REQUIREMENTS
01 32 10	EXISTING PROJECT INFORMATION
01 32 20	PROJECT SAFETY REQUIREMENTS
01 33 00	SUBMITTAL PROCEDURES
01 44 00	QUALITY ASSURANCE PROCEDURES
01 50 10	TEMPORARY FACILITIES AND CONTROLS
01 60 00	PRODUCT REQUIREMENTS
01 77 10	CLOSE-OUT PROCEDURES
01 78 00	CLOSE-OUT SUBMITTALS
DIVISION 02 EXIST	ING CONDITIONS
02 41 00	DEMOLITION

DIVISION 03 CONCRETE

03 10 00	CONCRETE FORMING AND ACCESSORIES
03 20 00	CONCRETE REINFORCEMENT

CAST-IN-PLACE CONCRETE 03 30 00 19001 / Lake Super Zoo 00 01 10 - 1

Black Bear Exhibit Renovation

DIVISION 04 MASONRY

04 20 00 UNIT MASONRY

DIVISION 05 METALS

05 12 00 STRUCTURAL STEEL FRAMING

05 50 00 METAL FABRICATIONS

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07 21 00 THERMAL INSULATION

07 21 19 FOAMED IN PLACE INSULATION – POLYICYNENE

07 42 13 METAL WALL PANELS

07 62 00 SHEET METAL FLASHING AND TRIM

07 90 05 JOINT SEALERS

DIVISION 08 OPENINGS

08 11 13 HOLLOW METAL DOORS AND FRAMES

08 71 00 DOOR HARDWARE

08 80 00 GLAZING

----- BLACK BEAR EXHIBIT GLAZING GLASS ENGINEERING ANALYSIS

DIVISION 09 FINISHES

09 22 16 NON-STRUCTURAL METAL FRAMING

09 90 00 PAINTING AND COATINGS

DIVISION 13 SPECIAL CONSTRUCTION

13 15 00 WATER FEATURE

DIVISION 31 EARTHWORK

31 22 00 GRADING

31 23 16 EXCAVATION

31 23 23 FILL

DIVISION 32 EXTERIOR IMPROVEMENTS

32 11 23 AGGREGATE BASE COURSES

32 12 16 ASPHALT PAVING

32 16 00 CONCRETE CURBS AND WALKS

32 31 13 CHAIN LINK FENCES AND GATES

32 92 19 SEEDING

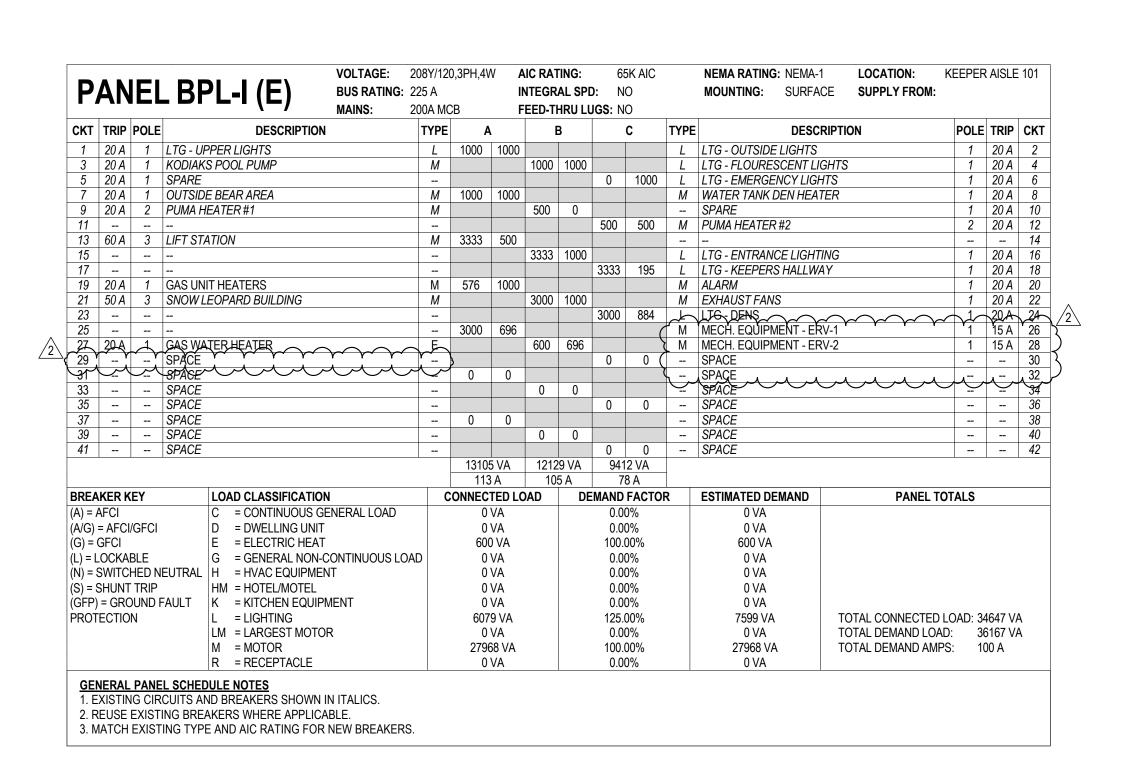
32 92 23 SODDING

DIVISION 33 UTILITIES

33 41 11 SITE STORM UTILITY DRAINAGE PIPING

33 46 00 SUBDRAINAGE

END OF SECTION



MOUNTING

SURFACE

SURFACE

TYPE

LUMINAIRE DESCRIPTION

10" SQUARE CANOPY LUMINAIRE

6" SURFACE DOWLIGHT

B. LUMEN OUTPUT LISTED ABOVE IS DELIVERED LUMENS.

1. PROVIDE WITH JUNCTION BOX MOUNTING ADAPTER KIT.

A. FINISH FOR ALL LUMINAIRES LISTED ABOVE SHALL BE PER ARCHITECT.

GENERAL LUMINAIRE SCHEDULE NOTES

LUMINAIRE SCHEDULE NOTES

LUMINAIRE SCHEDULE

4000K 6,600 INTEGRAL ELECTRONIC

4000K 1,150 INTEGRAL ELECTRONIC

TEMP OUTPUT

POWER SUPPLY

DRIVER

DRIVER

MANUFACTURER & MODEL

LITHONIA CNY LED OR APPROVED

EATON HALO SLD612 OR APPROVED

RECEPTACLE W/ CEILING CORD DROP BOLLARD OR POST TOP LUMINAIRE FLOORBOX W/ DUPLEX RECEPTACLE EXIT SIGN, SHADING INDICATES FACES. ARROWS PER PLAN FLOORBOX W/ DOUBLE DUPLEX RECEPTACLE COMBINATION FLOORBOX W/ POWER AND LOW **VOLTAGE** LIGHTING CONTROLS SYMBOLS LEGEND \$ STANDARD SWITCH CONNECTIONS/EQUIPMENT SYMBOLS LEGEND \$a STANDARD SWITCH W/ SWITCHING SUBSCRIPT EQUIPMENT ELECTRICAL CONNECTION 3-WAY SWITCH MOTOR CONNECTION 4-WAY SWITCH MOTOR RATED SWITCH W/ THERMAL OVERLOAD LOW VOLTAGE SWITCH DISCONNECT SWITCH LOW VOLTAGE SWITCH PER SCHEDULE **FUSED DISCONNECT SWITCH** OCCUPANCY SENSOR SWITCH JUNCTION BOX KEYED SWITCH UTILITY METER DIMMER SWITCH **EQUIPMENT CABINET AS NOTED** TIMER SWITCH BRANCH PANEL RECESSED OCCUPANCY SENSOR CEILING MOUNT BRANCH PANEL SURFACE PHOTOCELL CEILING MOUNT TRANSFORMER OCCUPANCY SENSOR WALL MOUNT SWITCHBOARD PHOTOCELL WALL MOUNT **GENERAL SYMBOLS LEGEND ONE-LINE SYMBOLS LEGEND** XX-XX) MECHANICAL EQUIPMENT TAG CIRCUIT BREAKER □□-O O FUSED SWITCH ⟨ XX-XX ⟩ KITCHEN EQUIPMENT TAG XXX DWELLING UNIT CIRCUIT TAG CURRENT TRANSFORMERS X KEYNOTE GROUND CONNECTION CONDUIT CONTINUATION REVISION TAG CONDUIT CAP REVISION CLOUD FEEDER CALLOUT DETAIL/PLAN CALLOUT SPD SURGE PROTECTIVE DEVICE **AUTOMATIC TRANSFER SWITCH** NORTH ARROW TRANSFORMER UTILITY METER GENERATOR

RECEPTACLE SYMBOLS LEGEND

SINGLE RECEPTACLE

DUPLEX RECEPTACLE

DOUBLE DUPLEX RECEPTACLE

DUPLEX RECEPTACLE W/ GFCI

DUPLEX RECEPTACLE ABOVE COUNTER

DOUBLE DUPLEX RECEPTACLE W/ GFCI

DUPLEX RECEPTACLE ON CEILING

DOUBLE DUPLEX RECEPTACLE ON CEILING

DUPLEX RECEPTACLE, HALF SWITCHED

DUPLEX RECEPTACLE, FULL SWITCHED

CONFIGURATION

NEMA CONFIGURATION

NOTES

VOLTAGE WATTS

120 V 15 W

52 W

120 V

SPECIAL PURPOSE RECEPTACLE, VERIFY NEMA

SPECIAL PURPOSE RECEPTACLE ON CEILING, VERIFY

DOUBLE DUPLEX RECEPTACLE ABOVE COUNTER

DUPLEX RECEPTACLE W/ GFCI ABOVE COUNTER

DOUBLE DUPLEX RECEPTACLE W/ GFCI ABOVE COUNTER

LIGHTING SYMBOLS LEGEND

SURFACE DOWNLIGHT

LINEAR RECESSED LUMINAIRE

LINEAR SURFACE LUMINAIRE

LINEAR PENDANT LUMINAIRE

LINEAR WALL LUMINAIRE

LINEAR STRIP LUMINAIRE

•—

WALL MOUNTED LUMINAIRE

RECESSED 2x2 LUMINAIRE

RECESSED 2x4 LUMINAIRE

SURFACE OR PENDANT 2x2 LUMINAIRE

SURFACE OR PENDANT 2x4 LUMINAIRE

POLE MOUNTED AREA LUMINAIRE

PENDANT OR FLUSH MOUNT LUMINAIRE

AFCI	ARC FAULI CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
С	CONDUIT
CKT	CIRCUIT
CO	CONDUIT ONLY
CU	COPPER
CLG	CEILING
CT	CURRENT TRANSFORMER
DIA.	DIAMETER
E E	EXISTING
EGC	EQUIPMENT GROUNDING CONDUCTO
F	FUSE
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FLA	FULL LOAD AMPERES
GEC	GROUNDING ELECTRODE CONDUCT
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GFPE	GROUND FAULT PROTECTION OF EG
HP	HORSEPOWER
IDF	INTERMEDIATE DISTRIBUTION FRAM
IG	ISOLATED GROUND
KCMIL	THOUSAND CIRCULAR MIL
KVA	KILOVOLT-AMP
KW	KILOWATT
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCA	MINIMUM CIRCUIT AMPERES
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MDU	MEDIA DISTRIBUTION UNIT
MIN	MINIMUM
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECT
MTS	MANUAL TRANSFER SWITCH
N N	NEW
NAC	NOTIFICATION APPLIANCE CIRCUIT
OC	ON CENTER
P	POLE
=	
PH	PHASE
PNL	PANEL
PWR	POWER
ROW	RIGHT-OF-WAY
S	SWITCH
SDP	SUB-DISTRIBUTION PANEL
SIM	SIMILAR
SPD	SURGE PROTECTIVE DEVICE
TP	TAMPER PROOF
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UPS	LININTERRUPTARI E POWER SUPPLY

ABBREVIATIONS

AFCI

AMPERES

ARC FAULT CIRCUIT INTERRUPTER

IPMENT GROUNDING CONDUCTOR ALARM CONTROL PANEL CANDLE LOAD AMPERES JNDING ELECTRODE CONDUCTOR UND FAULT CIRCUIT INTERRUPTER UND FAULT PROTECTION OF EQUIPMENT SEPOWER RMEDIATE DISTRIBUTION FRAME ATED GROUND USAND CIRCULAR MIL VOLT-AMP NATT I CIRCUIT BREAKER MUM CIRCUIT AMPERES DISTRIBUTION FRAME I DISTRIBUTION PANEL IA DISTRIBUTION UNIT LUG ONLY (IMUM OVERCURRENT PROTECTION IUAL TRANSFER SWITCH FICATION APPLIANCE CIRCUIT ENTER IT-OF-WAY DISTRIBUTION PANEL GE PROTECTIVE DEVICE PER PROOF LESS NOTED OTHERWISE UPS UNINTERRUPTABLE POWER SUPPLY **VOLTS VOLT-AMPERES** WIRE WEATHERPROOF XFMR TRANSFORMER TYPICAL DEVICE MOUNTING HEIGHTS

SWITCHES THERMOSTATS +46" AFF **CARD READERS** +46" AFF PANELBOARDS +72" TO TOP OR PER NEC 404.8 +48" TO HIGHEST OPERABLE RESIDENTIAL PANEL CONTROL CONTROL PANELS +72" TO TOP

RECEPTACLES, ABOVE COUNTER +6" ABOVE COUNTER,

COORDINATE WITH CASEWORK

+18" AFF

RECEPTACLES

PHONE/DATA/CATV OUTLET

1. MEASUREMENTS ARE TYPICAL UNO ON PLANS 2. MEASUREMENTS ARE TO CENTER OF BOX UNO 3. COMPLY WITH ALL ADA ACCESSIBILITY GUIDELINES

GENERAL PROJECT NOTES

- 1. COMPLETED INSTALLATION SHALL COMPLY WITH NEC AND ALL LOCAL LAWS, ORDINANCES, AND REGULATIONS.
- 2. CODE BASIS OF DESIGN: 2017 NATIONAL ELECTRICAL CODE WITH MINNESOTA STATE MODIFICATIONS (NFPA 70), 2015 INTERNATIONAL BUILDING CODE, 2015 MINNESOTA ENERGY CODE.
- 3. PLANS ARE DIAGRAMMATIC IN NATURE TO COMMUNICATE SCOPE OF WORK AND GENERAL INTENT. CONTRACTOR SHALL PROVIDE ALL FITTINGS, BOXES, AND APPURTENANCES NECESSARY FOR A COMPLETE AND OPERABLE ELECTRICAL SYSTEM.
- 4. DEVICE LOCATIONS ON PLANS MAY NOT BE EXACT. REFER TO ARCHITECTURAL PLANS FOR MORE DETAILED INFORMATION REGARDING DIMENSIONS AND LAYOUTS. COORDINATE ALL DEVICE AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL AND OTHER TRADES.
- EQUIPMENT FOR OTHER DISCIPLINES MAY BE SHOWN FOR REFERENCE ONLY. REFER TO OTHER DISCIPLINES' DRAWINGS FOR MORE DETAIL REGARDING EQUIPMENT SPECIFICATIONS AND INFORMATION.
- PLANS SHALL GOVERN IN MATTERS OF QUANTITY, SPECIFICATIONS SHALL GOVERN IN MATTERS OF QUALITY. PLANS ARE TO BE TIED TO SPECIFICATIONS FOR A COMPLETE DESIGN PACKAGE.
- 7. WIRE SIZE AND QUANTITIES ARE NOT GENERALLY INDICATED ON PLANS. FOR A TYPICAL 20A/1P CIRCUIT BREAKER, PROVIDE (3) #12 CU CONDUCTORS (PHASE, NEUTRAL, GROUND). FOR A TYPICAL 20A/2P CIRCUIT BREAKER, PROVIDE (3) #12 CU CONDUCTORS (PHASE, PHASE, GROUND). FOR A TYPICAL 20A/3P CIRCUIT BREAKER, PROVIDE (4) #12 CU CONDUCTORS (THREE PHASES PLUS GROUND).
- 8. TO COMPENSATE FOR VOLTAGE DROP, ON 20A, 120V CIRCUITS: OVER 100 FEET, PROVIDE #10 AWG, OVER 150 FEET, PROVIDE #8 AWG. ON 20A, 277V CIRCUITS: OVER 250 FEET, PROVIDE #10 AWG.
- 9. CIRCUIT NUMBERS ARE GENERALLY INDICATED AS XX-##. WHERE (XX) INDICATES PANEL NAME AND (##.) INDICATES THE CIRCUIT NUMBER. IN SOME CASES THE PANEL MAY BE COMMON TO A LARGE AREA, AND THE CIRCUIT NUMBER ONLY MAY BE CALLED OUT ON THE PLANS.
- 10. MAINTAIN AT LEAST 12" SEPARATION BETWEEN POWER AND COMMUNICATIONS WIRING ROUTED PARALLEL. SMALLER SEPARATION MAY BE ALLOWED WHEN CROSSING.
- 11. REFER TO ARCHITECTURAL PLANS FOR FIRE RATED ASSEMBLIES. MAINTAIN 24" SEPARATION BETWEEN DEVICES IN FIRE-RATED WALLS. PROVIDE FIRE-RATED BOXES OR "PUTTY PADS" AS REQUIRED TO MAINTAIN FIRE RATING.
- 12. REFER TO ARCHITECTURAL PLANS FOR ACOUSTIC ASSEMBLIES. PROVIDE ACOUSTIC BOXES OR "PUTTY PADS" AS REQUIRED TO MAINTAIN ACOUSTIC RATING.
- 13. ELECTRICAL EQUIPMENT IS DESIGNED BASED ON A SPECIFIC MANUFACTURER. VERIFY FINAL CLEARANCES AND SPACE REQUIREMENTS WITH EQUIPMENT SUBMITTALS. THE CONTRACTOR IS RESPONSIBLE FOR ANY REDESIGN OR RELOCATION OF EQUIPMENT IF APPROVED EQUIPMENT DOES NOT MATCH BASIS OF DESIGN.
- 14. ALL CONDUIT ROUTING SHALL FOLLOW BUILDING LINES WHERE POSSIBLE. COORDINATE ROUTING WITH ARCHITECTURAL ELEMENTS. ALL ROUTING OF EXPOSED CONDUITS SHALL BE APPROVED BY THE ARCHITECT.
- 15. ALL LIFE SAFETY WIRING SHALL BE READILY IDENTIFIED AS SUCH AND SHALL BE ROUTED ENTIRELY INDEPENDENTLY OF NORMAL WIRING.
- 16. LIGHTING CONTROL: PLANS ARE DIAGRAMMATIC TO SHOW GENERAL INTENT. ALL LIGHTING CONTROL DEVICES MAY NOT BE SHOWN ON THE PLANS. REFER TO LIGHTING CONTROL NARRATIVE FOR DETAILED INFORMATION REGARDING FUNCTIONALITY.
- 17. COORDINATE UNDERGROUND CONDUIT ROUTING WITH STRUCTURAL PLANS.
- 18. CONSULT STRUCTURAL ENGINEER OF RECORD FOR ALL STRUCTURAL PENETRATIONS.

ELECTRICAL SHEET INDEX

- E0.1 COVER SHEET ELECTRICAL
- E1.1 DEMOLITION FLOOR PLAN ELECTRICAL
- E2.1 FIRST FLOOR PLAN POWER
- E3.1 FIRST FLOOR RCP LIGHTING E4.1 SPECIFICATIONS - ELECTRICAL

I hereby certify that this plan, specification, or

enriching

through

duluth * virginia* twin cities

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MEPENGINEERS

Duluth, MN | Vancouver, WA

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Project No: 19004

Superior Zoo - Black Bear

Lake

Exhibit

7210 Fremont Street

date: _7/31/2019 12:42:15 PM

Duluth MN, 55807

project #: 19004

drawn by: SEW

checked by: TJH

communities

report was prepared by me or under my direct supervision and that I am a duly Licensed of Minnesota. Typed or Printed Name: Thaver Hendrickson License Number: <u>57042</u>

no.

date

07/09/2019

revision /

issue

Permit Issue

Addendum #2	07/31/2019
ı	

COVER SHEET sheet title: ELECTRICAL

number:

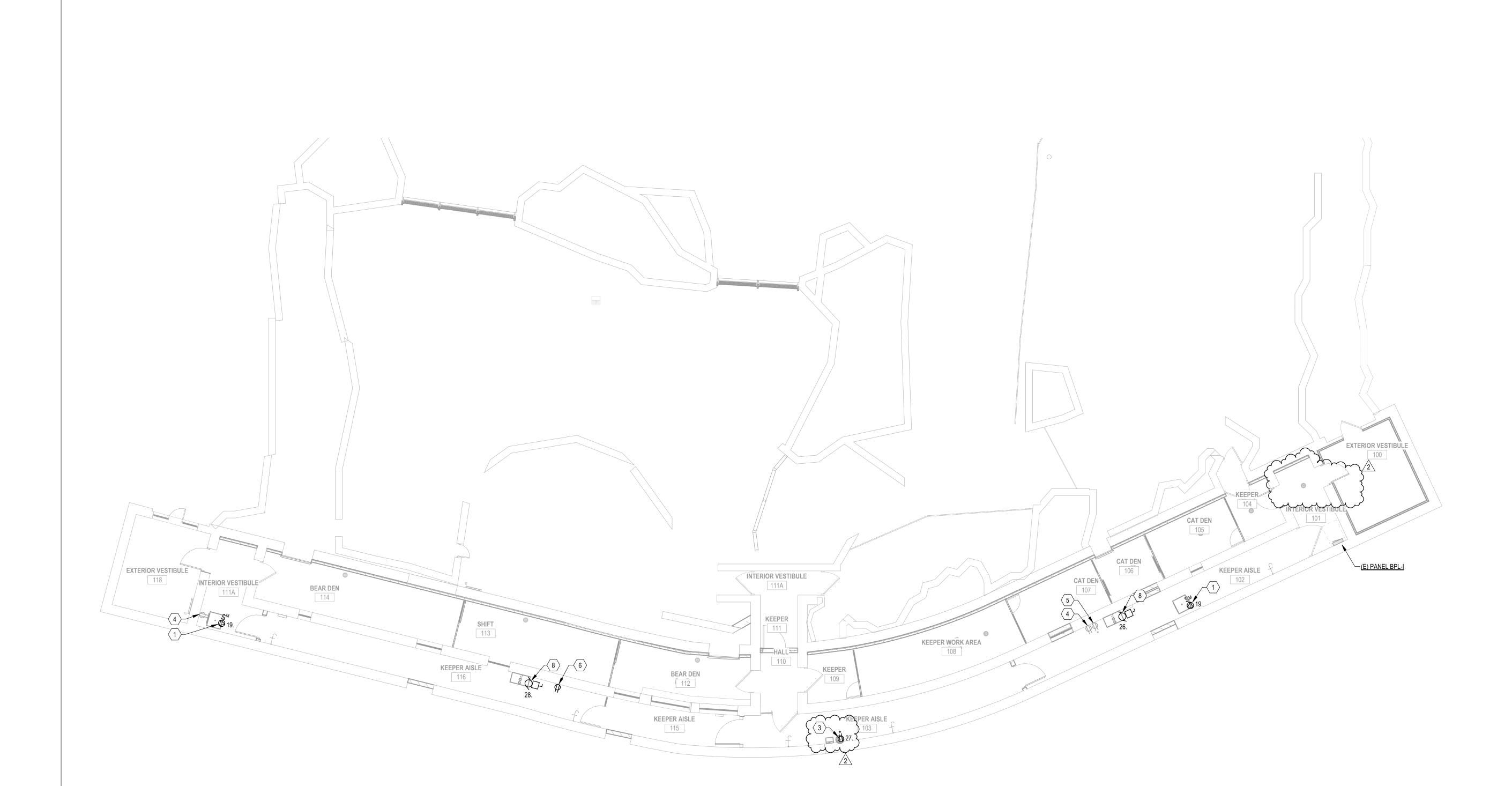
GENERAL SHEET NOTES

- A. FIELD VERIFY ALL CONDITIONS THAT MAY AFFECT CONSTRUCTION.
- B. GRAY LINES INDICATE EXISTING TO REMAIN, BOLD LINES INDICATE NEW WORK.
- C. MECHANICAL AND PLUMBING EQUIPMENT SHOWN FOR REFERENCE ONLY. REFER TO DIVISIONS 22 AND 23 FOR ALL REQUIRED INFORMATION.
- D. ALL CICUIT NUMBERS THIS SHEET REFER TO (E) PANEL BPL-1 U.N.O.

KEYNOTES

- 1 GAS UNIT HEATER, 120V, 24FLA, PROVIDE 3/4"C, 3#10-12 NOT USED, 3 GAS FIRED WATER HEATER, 120V, 5:0A.
- 4 (E) DUPLEX RECEPTACLE TO REMAIN.
- 5 (E) GFCI DUPLEX RECEPTACLE TO REMAIN.
 6 PROVIDE (N) DUPLEX RECEPTACLE CONNECT TO
- 7 NOT USED.

 8 PROVIDE CONNECTION TO ENERGY RECOVERY UNIT. 120V,
 MCA.



FIRST FLOOR PLAN - POWER

SCALE: 1/8" = 1'-0"



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Project No: 19004

Lake Superior Zoo - Black Bear Exhibit

7210 Fremont Street Duluth MN, 55807

project #: 19004

date: 7/31/2019 12:42:18 PM

drawn by: SEW

checked by: TJH

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature:

Typed or Printed Name: Thaver Hendrickson

revision / issue no. date

Permit Issue 07/09/2019
Addendum #2 07/31/2019

FIRST FLOOR
sheet title: PLAN - POWER

et r: **_**

E2.1

SECTION 220700 - PLUMBING INSULATION

A. PLUMBING INSULATION

INSULATION SHALL BE OWENS-CORNING, MANVILLE CORPORATION, CERTAIN-TEED, KNAUF, OR EQUAL. ALL INSULATING MATERIALS SHALL HAVE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723 NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. INSULATION ACCESSORIES SUCH AS ADHESIVES, MASTICS, CEMENT, TAPES AND GLASS CLOTH SHALL HAVE THE SAME COMPONENT RATING AS LISTED ABOVE.

2. ALL PIPING SHALL BE WRAPPED WITH 1.5" THICK ASTMC547 GLASS FIBER INSULATION.

SECTION 22 05 33 - HEAT TRACING FOR PLUMBING PIPING

A. SELF REGULATING HEAT TRACING SYSTEM

1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

a) RAYCHEM; A DIVISION OF TYCO THERMAL CONTROLS.

b) CHROMALOX, INC.; WIEGARD INDUSTRIAL DIVISION; EMERSON ELECTRIC COMPANY.

B. HEATING CABLES SHALL BE SELF-REGULATING TEMPERATURE MAINTENANCE HEATING CABLES SPECIFICALLY DESIGNED FOR THIS APPLICATION, TESTED AND APPROVED TO IEEE 515.1 AND CSA 22.2 NO 130-03.

C. THE CONSTRUCTION OF THE SELF-REGULATING TEMPERATURE MAINTENANCE HEATING CABLE SHALL CONSIST OF A CONTINUOUS CORE OF CONDUCTIVE POLYMER THAT IS RADIATION CROSSLINKED, EXTRUDED BETWEEN TWO (2) 16 AWG NICKEL-PLATED COPPER BUS WIRES THAT VARIES ITS POWER OUTPUT IN RESPONSE TO PIPE TEMPERATURE CHANGES.

D. THE HEATING CABLE SHALL HAVE A MODIFIED POLYOLEFIN INNER JACKET FOR DIELECTRIC INTEGRITY LONG LIFE EXPECTANCY.

E. THE HEATING CABLE SHALL HAVE A LAMINATED ALUMINUM FOIL LAYER (MYLAR WRAP) FOR ADDITIONAL MECHANICAL PROTECTION AND SHALL ACT AS A PLASTICIZER DIFFUSION SHIELD.

F. THE HEATING CABLE SHALL HAVE A THICKER GAUGE (5/24) TINNED COPPER BRAID WITH MINIMUM 70% COVERAGE FOR GROUND PATH AND MECHANICAL RUGGEDNESS.

G.THE HEATING CABLE SHALL HAVE A POLYOLEFIN OUTER JACKET PRINTED WITH CABLE MODEL #, AGENCY LISTINGS, BATCH NUMBER AND METER MARKS (FOR EASE OF INSTALLATION WITHIN MAXIMUM CIRCUIT LENGTH.

H. THE HEATING CABLE SHALL HAVE A SELF-REGULATING FACTOR OF AT LEAST 70 PERCENT. THE SELF-REGULATING FACTOR IS DEFINED AS THE PERCENT REDUCTION OF THE HEATING CABLE POWER OUTPUT GOING FROM A 40°F PIPE TEMPERATURE

I. THE HEATING CABLE SHALL OPERATE ON LINE VOLTAGES OF 208 VOLTS WITHOUT THE USE OF TRANSFORMERS.

J. THE HEATING CABLE SHALL BE INCLUDED IN A UL LISTED, CSA CERTIFIED, OR FM APPROVED SYSTEM.

K. CONSTANT WATTAGE CABLES ARE NOT ACCEPTABLE.

.. HEATING CABLE CONNECTION KITS

TO 150°F PIPE TEMPERATURE.

1. CONTRACTOR SHALL PROVIDE POWER CONNECTIONS, SPLICES/TEES, AND END SEAL KITS TO PROPERLY CONNECT & TERMINATE THE HEATING CABLE.

2. ALL SPLICES, TEES AND CROSSES SHALL BE INSTALLED UNDERNEATH THE PIPE INSULATION WITH SERVICE LOOPS INSTALLED TO ALLOW FOR FUTURE SERVICE OF THE PIPING.

3. CONNECTION KITS SHALL BE RATED TYPE 4X TO PREVENT WATER INGRESS AND CORROSION. ALL COMPONENTS SHALL BE UV STABILIZED AND SHALL NOT REQUIRE THE INSTALLING CONTRACTOR TO CUT INTO THE HEATING-CABLE CORE TO EXPOSE THE BUS WIRES.

4. CONNECTION KITS SHALL BE UL LISTED, CSA CERTIFIED, AND FM APPROVED.

M.ATTACHMENT METHOD OF HEATING CABLE TO THE PIPING SHALL BE:

1. GENERAL PURPOSE, HIGH TEMPERATURE, GLASS FILAMENT TAPE FOR INSTALLATION @ 40°F AND ABOVE. CONTRACTOR TO FIX THE HEATING CABLE TO THE PIPE EVERY 12" BY WRAPPING THE GT-66 TAPE AROUND THE PIPE & OVER THE HEATING

2. ALUMINUM TAPE, HIGH TEMPERATURE FOR ALL PLASTIC PIPING FOR INSTALLATIONS @ 32°F AND ABOVE. TAPE IS

3. METAL CABLE TIES ARE NOT PERMITTED

N. IDENTIFICATION OF HEATING CABLE SYSTEM:

1. CONTRACTOR SHALL PROVIDE & INSTALL "ELECTRIC HEAT TRACED" LABELS ON EXTERIOR OF PIPE INSULATION EVERY TEN (10) FEET ON OPPOSITE SIDES OF THE PIPE FOR THE ENTIRE LENGTH OF HEAT TRACED PIPING.

2. IN ADDITION, ALL SPLICES, TEES, CROSSES AND POWER CONNECTIONS SHALL BE LABELED ON THE EXTERIOR OF THE PIPE INSULATION INDICATING THAT PRESENCE OF A CONNECTION KIT.

O.ENERGY EFFICIENT CONTROL SYSTEM

1. ALL SELF-REGULATING TEMPERATURE MAINTENANCE CABLE SHALL BE CONTROLLED VIA AN ENERGY SAVING, PROGRAMMABLE SINGLE CIRCUIT CONTROLLER TO PROVIDE ADJUSTABLE MAINTAINED TEMPERATURES IN THE RANGE OF 105°F (40°C) TO 140°F (60°C).

2. DIGITAL CONTROLLER SHALL OPERATE ON 208 – 240 V.

3. PRE-PROGRAMMED DUTY CYCLES BASED ON AMBIENT TEMPERATURE RANGING FROM

4. FLEXIBLE TEMPERATURE CONTROL FROM 105 – 140°F.

5. THREE PROGRAMMABLE TEMPERATURE SET POINTS FOR MAXIMUM ENERGY EFFICIENCY: MAINTAIN, ECONOMY, OFF

6. CONTROLLER SHALL HAVE HEAT CYCLE SETTING.

7. HEATING CABLE MANUFACTURER SHALL PROVIDE A LOCAL DIGITAL CONTROLLER WITH 24/7 PRE-PROGRAMMED TIME BASED PROFILES SPECIFIC TO THE SELECTED HEATING CABLE APPLICATION SUCH AS SCHOOLS, HOSPITALS AND PRISONS.

8. CONTROLLER SHALL HAVE REMOTE TEMPERATURE SETTING THROUGH 0 – 10 VDC BMS INTERFACE.

9. CONTROLLER SHALL HAVE A PIPE TEMPERATURE SENSOR, LOW/HIGH PIPE TEMPERATURES ALARMS AND HIGH TEMPERATURE CUT-OUT TO MAXIMIZE THE ENERGY EFFICIENCY OF THE HWAT SYSTEM BY VERIFYING THAT THE HOT PIPE TEMPERATURE IS AT THE CORRECT TEMPERATURE (LOW TEMPERATURE ALARM); AND TO MONITOR AND ALARM IF THE PIPE TEMPERATURE IS HOTTER THAN INTENDED (HIGH TEMPERATURE ALARM AND CUT-OUT).

10. MULTIPLE CONTROLLERS CAN BE NETWORKED TOGETHER (MASTER/SLAVE ASSOCIATION) TO ALLOW BMS TO INTERFACE WITH A MASTER TO CONTROL CLONED CIRCUITS, AND TO MINIMIZE THE NUMBER OF CONTROLLERS THAT MUST BE INDIVIDUALLY PROGRAMMED.

11. CONTROLLER SHALL HAVE 24 A SWITCHING CAPACITY RATING.

12. ENCLOSURE TYPE SHALL BE NEMA 12 (ABS).

13. CONTROLLER SHALL HAVE NO/NC ALARM CONTACTS. CONTROLLER SHALL ALARM ON:

b) CONTROLLER REINITIALIZED c) INTERNAL CONTROLLER TEMPERATURE TOO HIGH d) PIPE TEMPERATURE TOO HIGH e) PIPE TEMPERATURE TOO LOW f)MASTER/SLAVE ERROR

14. DIGITAL CONTROLLER SHALL HAVE C-UL-US APPROVALS SPECIFICALLY FOR USE WITH THE HEATING CABLE.

P. CABLE INSTALLATION ACCESSORIES: FIBERGLASS TAPE, HEAT CONDUCTIVE PUTTY, CABLE TIES, SILICONE END SEALS AND 🖡 SPLICE KITS, AND INSTALLATION CLIPS ALL FURNISHED BY MANUFACTURER, OR AS RECOMMENDED IN WRITING BY

\mathcal{L} 221116 - DOMESTIC WATER PIPING

A. PIPING FOR COLD AND HOT WATER SYSTEMS SHALL BE ANY OF THE FOLLOWING:

1. TYPE 'L' COPPER TUBING ABOVE GRADE, WITH WROUGHT COPPER SOLDER FITTINGS JOINED USING 95-5 SOLDER, TYPE 'K' COPPER TUBING BELOW GRADE 3 INCHES AND SMALLER. DIELECTRIC COUPLINGS SHALL BE USED BETWEEN STEEL AND COPPER CONNECTIONS.

2. HIGH-DENSITY CROSSLINKED POLYETHYLENE (PEX) PIPING, WITH FITTINGS OF COLD-EXPANSION COMPRESSION SLEEVE DESIGN. FITTINGS SHALL BE MANUFACTURED OF BRASS AND SHALL BE SUPPLIED BY THE PIPING MANUFACTURER. ACCEPTABLE MANUFACTURERS ARE REHAU, UPONOR WIRSBO OR APPROVED EQUAL.

SECTION 221316 - SANITARY, WASTE, AND VENT PIPING

A. SANITARY, WASTE, AND VENT PIPING SHALL BE SERVICE WEIGHT HUBLESS CAST IRON PIPE AND HUBLESS CAST IRON DRAINAGE FITTINGS OR PVC SOLVENT WELD AND FITTINGS.

B. UNDERGROUND AND ABOVE GROUND SANITARY AND STORM SEWERS SHALL BE SERVICE WEIGHT "NO-HUB" CAST IRON PIPE OR PVC.

. WALL CLEANOUT TO BE JOSAM SERIES 58790, OR EQUAL, WALL CLEANOUT TEE, RECESSED BRONZE TAPPED PLUG AND STAINLESS STEEL ACCESS COVER WITH SCREW. UNIT SPECIFIED IS WITH NO-HUB CONNECTION. CONTRACTOR TO COORDINATE PIPE FITTINGS AND MATERIAL AND PROVIDE SAME.

SECTION 222123 - PUMPS FOR PLUMBING

A. REFER TO CIRCULATION PUMP SCHEDULE

SECTION 224000 - PLUMBING FIXTURES AND TRIM

A. REFER TO PLUMBING FIXTURE SCHEDULE.

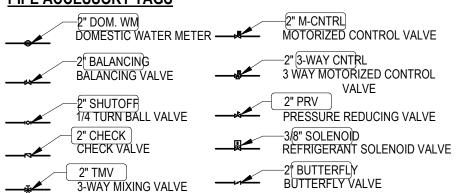
SECTION 223400 - FUEL FIRED DOMESTIC WATER HEATERS

A. REFER TO WATER HEATER SCHEDULE

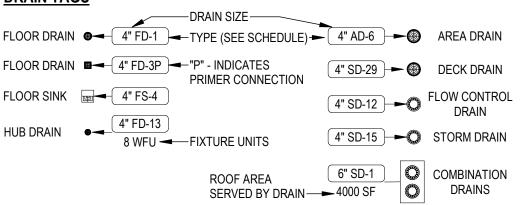
EQUIPMENT ABBREVIATIONS

EWH ELECTRIC WATER HEATER FCU FAN COIL UNIT ACC AIR COOLED CONDENSER ACCU AIR COOLING CONDENSING UNIT FIRF PLIMP AHU AIR HANDLING UNIT GREASE INTERCEPTOR HEATING WATER PUMP CHILLER HEAT EXCHANGER COOLING TOWER HEAT RECOVERY UNIT CUH CABINET UNIT HEATER ROOFTOP UNIT CWP CONDENSER WATER PUMP SEWAGE EJECTOR PUMP CHWP CHILLED WATER PUMP SUMP PUMP DBP DOMESTIC WATER BOOSTER PUMP UNIT HEATER DCP DOMESTIC WATER CIRCULATING PUMP WH WATER HEATER EXPANSION TANK

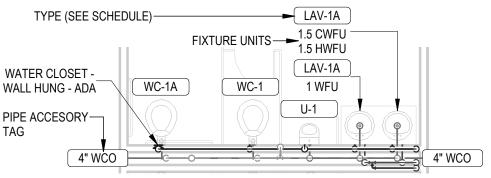
PIPE ACCESSORY TAGS



DRAIN TAGS



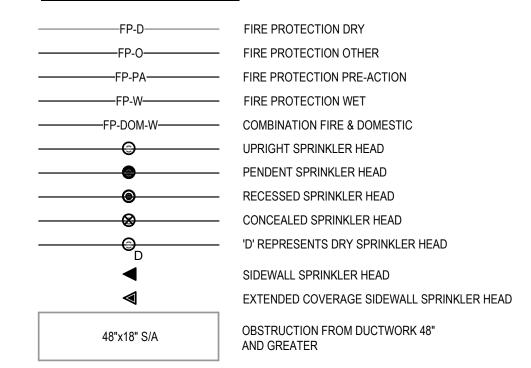
PLUMBING FIXTURE TAGS



PLUMBING AND PIPING SYMBOLS

2"	PIPE SIZE TAG (DIAMETER)
	ABOVE GROUND PIPING
1/8" / 12" SLOPE	—PIPE SLOPE TAG
1/0 / 12 0201 2	BELOW GROUND PIPING
INVERT: -10' - 1"	PIPE INVERT ELEVATION TAG
(E)	EXISTING PIPE TAG
	PIPING BEING DEMOLISHED
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CD	CONDENSATE DRAINAGE
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
G	NATURAL GAS
PG	PROPANE GAS
REF-L	REFRIGERANT-LIQUID
REF-S	REFRIGERANT-SUCTION
REF-HG-	REFRIGERANT-HOT GAS
STM	STEAM
CDR	CONDENSATE RETURN
CWV	COMBINATION WASTE & VENT
CA	COMPRESSED AIR
CW	DOMESTIC COLD WATER
——————————————————————————————————————	HARD COLD WATER
	SOFT COLD WATER
—————F-CW——	FILTERED COLD WATER
	REVERSE OSMOSIS WATER
HW	HOT WATER
——————————————————————————————————————	HOT WATER 140°
——————HW-R——	HOT WATER RECIRCULATION
——————————————————————————————————————	HOT WATER RECIRCULATION 140°
GV	GREASE VENT
GW	GREASE WASTE
	INDIRECT WASTE
OV	OIL VENT
OW	

FIRE PROTECTION SYMBOLS



PUMP DISCHARGE

—SHWS———— SOLAR HOT WATER SUPPLY

OSD—OVERFLOW STORM DRAINAGE

SANITARY SEWER (WASTE)

DEGREE TEE

-45 DEGREE TEE

PLUMBING SHEET INDEX

PLUMBING

P1.1 FLOOR PLANS - PLUMBING

P5.1 PLUMBING SCHEDULES

P0.1 COVER SHEET AND SPECIFICATION -

ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN

THIS SET.THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE

USED IN THIS SET OF DRAWINGS.

SOLAR HOT WATER RETURN

— — — — V — — — — SANITARY VENT

PLUMBING GENERAL NOTES

- WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.
- * PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE
- * FIELD VERIFY ALL NEW WATER, WASTE, AND VENT PIPING CONNECTIONS AND PROVIDE
- NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS. * PITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED
- OTHERWISE.
- * FIELD VERIFY LOCATION AND INVERTS OF SITE UTILITIES PRIOR TO INSTALLATION.
- * ROUTE DOMESTIC WATER AND SANITARY SEWER TO SITE UTILITIES 5'-0" FROM BUILDING
- UNLESS NOTED OTHERWISE. REFER TO CIVIL PLANS. * WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.
- * PROVIDE CLEANOUT IN ACCESSIBLE LOCATION AT THE BASE OF ALL PLUMBING RISERS.

Superior Zoo - Black Bear Exhibit

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project #:	19004
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drawn by:	ZJK
ahaakad hyr	

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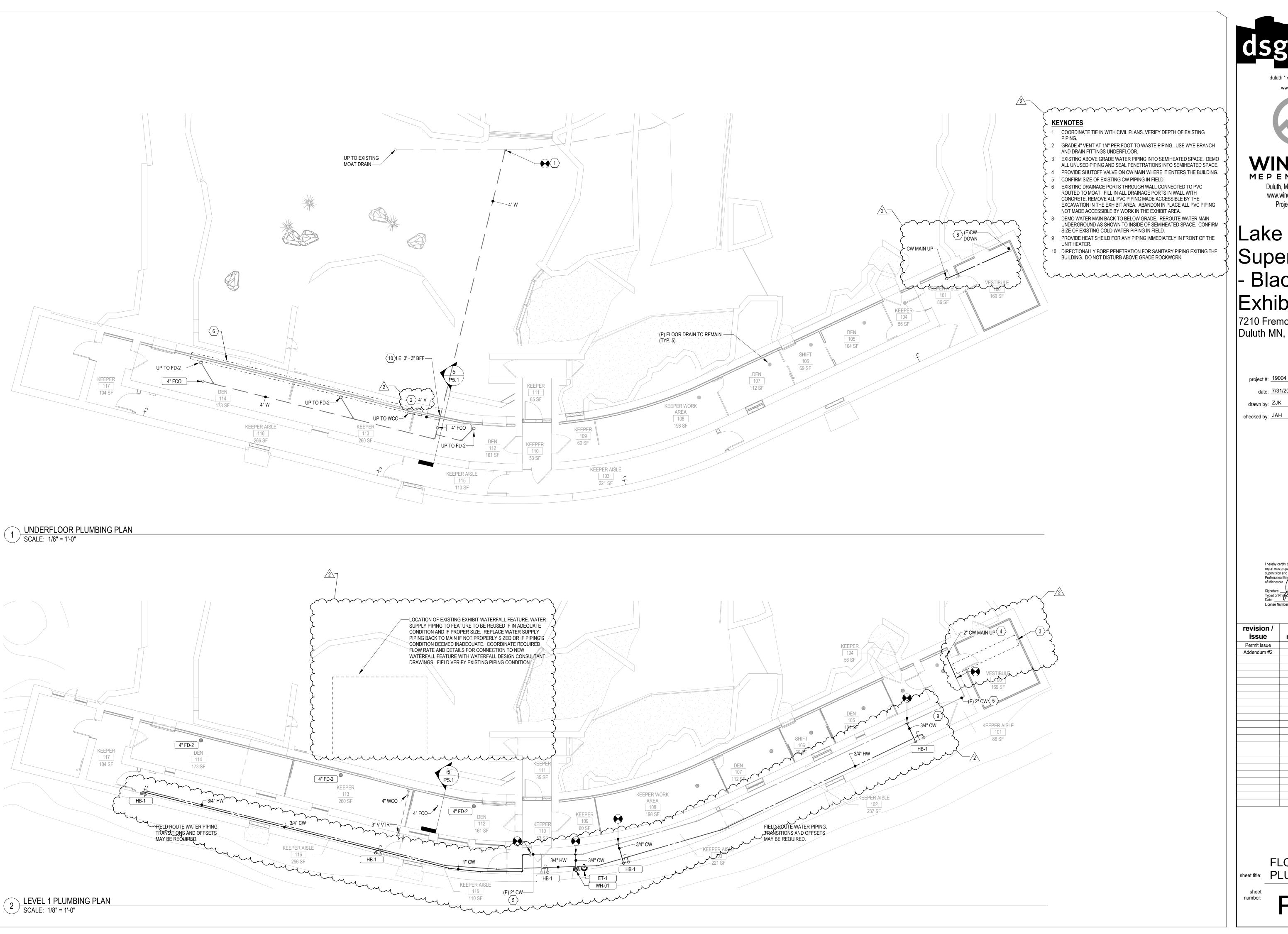
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COVER SHEET SPECIFICATION

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Lake Superior Zoo - Black Bear Exhibit

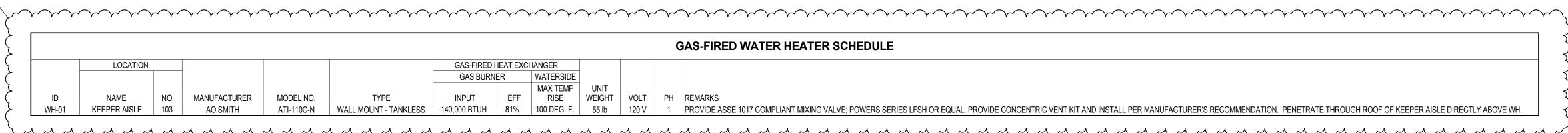
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FLOOR PLANS sheet title: PLUMBING



	DOMESTIC FIXTURE SCHEDULE											
	FLOW FIXTURE PIPE SIZE											
ID	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL DESCRIPTION	FINISH	MAX PRESS	COLD WATER TEMP.	HOT WATER TEMP.	MAX. MIXED WATER TEMP.	COLD WATER	HOT WATER	SPECIFICATION
HB-1	HOSE BIBB	WOODFORD	22	BRASS	ROUGH	125.0	40 °F	120 °F	120 °F	3/4	3/4	INTERIOR HOSE BIBB WITH VACUUM BREAKER, 3/4" HOSE THREAD OUTLET, LOCK SHIELD CAP, AND REMOVABLE "TEE" HANDLE. PROVIDE SHUTOFF VALVE IN HOT AND COLD WATER SUPPLY AHEAD OF HOSE BIBB.
Grand total:	and total: 5											

TYPICAL FOR MASONRY OR CONCRETE WALL.

PIPE PENETRATION THRU EXTERIOR WALLS

SEALS OR EQUAL.

SCALE: 1/8" = 1'-0"

3. FOR WALL PENETRATION WITH FIRE RATINGS GREATER THAN (1) HOUR, USE THUNDERLINE "PYRO-PAC"

4. WHERE PIPING EXPOSED AT FINISHED WALL, FLUSH MOUNT SLEEVE, AND PROVIDE AN ESCUTCHEON

4" FCO

DEN 112 SECTION

SCALE: 1/4" = 1'-0"

TO FD-2

-4" W TO VENT PIPING

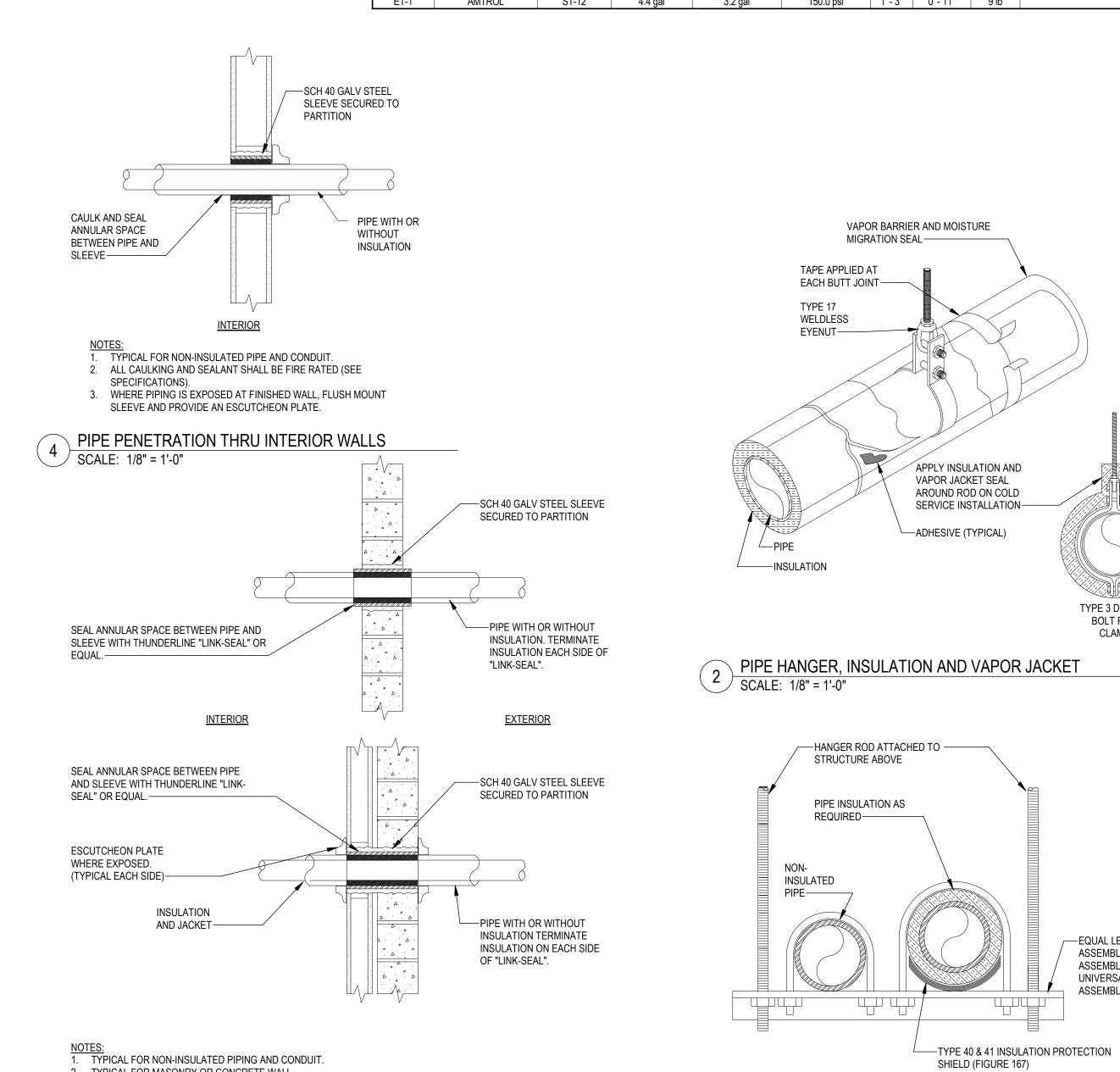
-MAIN WASTE

EXITING THE BUILDING

SERVICE PIPING

	FLOOR DRAIN SCHEDULE												
	MATERIAL DESCRIPTION PRIMER WASTE VENT PRIMER												
ID	DESCRIPTION	MANUFACTURER	MODEL	QTY	DRAIN BODY	STRAINER			PIPE SIZE F	PIPE SIZE	SPECIFICATION		
FD-2	AREA DRAIN	WATTS	FD-320-SET	3	EPOXY COATED CAST IRON	DUCTILE IRON	No	4"	2"		AREA DRAIN WITH ANCHOR FLANGE, MEMBRANE CLAMP WITH WEEPHOLES, 8" DIAMETER ADJUSTABLE TOP, AND NO HUB CONNECTION.		

EXPANSION TANK SCHEDULE												
	TANK UNIT DIMENSIONS UNIT											
ID	MANUFACTURER	MODEL NO.	VOLUME	ACCEPTANCE VOL.	PRESSURE RELIEF	HEIGHT	DIAMETER	WEIGHT	REMARKS			
ET 4	AMTDOL	OT 40	4.4	2.0	150.0 ==:	41 211	0' 11"	O lb				





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Lake Superior Zoo - Black Bear Exhibit

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TYPE 3 DOUBLE

BOLT PIPE CLAMP

PEQUAL LEG ANGLE
ASSEMBLY (FIG. 50 CHANNEL

ASSEMBLY (FIG. 45), OR UNIVERSAL TRAPEZE ASSEMBLY (FIG. 46)

NOTES:

1. SIZE RODS, SPRING CUSHION, AND HORIZONTAL MEMBER APPROVED TO SATISFY LOAD

REQUIREMENT WITH SAFETY FACTOR OF 5.

TRAPEZE TYPE PIPE SUPPORT

SCALE: 1/8" = 1'-0"

2. FIGURE NUMBERS ARE TYPICAL TO GRINNELL SUPPORT NUMBERS.

revision / issue no. date Permit Issue 07/09/2019 Addendum #2 07/31/2019

> **PLUMBING** SCHEDULES

number: